

# Claims

- [c1] 1. A method for building an automated datapath system generating tool for a datapath system including bit-sliced data between at least one source stage and at least one subsequent stage that are connected across a channel, the method comprising the steps of:
- defining at least one system characteristic;
  - generating a core/pin rule for the design that defines each core of the design, each pin of each core and corresponding pin attributes; and
  - constructing class-type inference rules for automatically generating the datapath system, each class-type inference rule executing at least one primitive function.
- [c2] 2. The method of claim 1, wherein the defining step includes:
- defining a set of cores to be used in the datapath system, and defining each stage of each core; and
  - establishing a link order name for each stage.
- [c3] 3. The method of claim 2, wherein the defining step further includes identifying any global attributes for a plurality of pins.

- [c4] 4. The method of claim 1, wherein the core/pin rule generating step includes:
- bundling pins of each stage according to at least one class, each class indicating a common wiring parameter for the pins, wherein the class is a pin attribute;
  - categorizing each class as one of a plurality of data-path system class-types;
  - bundling pins according to at least one channel identifier, wherein the channel identifier is a pin attribute;
  - and
  - generating the core/pin rule that defines each core of the design, each pin of each core and corresponding pin attributes.
- [c5] 5. The method of claim 4, further comprising the step of assigning a vector index to each pin within a multiple pin core having more than one pin with the same class and channel identifier, wherein the vector index is a pin attribute.
- [c6] 6. The method of claim 4, further comprising the steps of bundling pins according to at least one global attribute, each global attribute indicating a common global parameter of the pins.
- [c7] 7. The method of claim 1, further comprising the step of

establishing a set of primitive functions for use in constructing the class-type inference rules.

- [c8] 8. A system for building an automated datapath system generating tool for a datapath system including bit-sliced data between at least one source stage and at least one subsequent stage that are connected across a channel, the method comprising the steps of:
- means for defining at least one system characteristic;
  - means for generating a core/pin rule for the design that defines each core of the design, each pin of each core and corresponding pin attributes; and
  - means for constructing class-type inference rules for automatically generating the datapath system, each class-type inference rule executing at least one primitive function.
- [c9] 9. The system of claim 8, wherein the defining means includes:
- means for defining a set of cores to be used in the datapath system, and defining each stage of each core;
  - means for establishing a link order name; and
  - means for identifying any global attributes for a plurality of pins.

- [c10] 10. The system of claim 8, wherein the core/pin rule generating means includes:
- means for bundling pins of each stage according to at least one class, each class indicating a common wiring parameter for the pins, wherein the class is a pin attribute;
  - means for categorizing each class as one of a plurality of datapath system class-types;
  - means for bundling pins according to at least one channel identifier, wherein the channel identifier is a pin attribute; and
  - means for generating the core/pin rule that defines each core of the design, each pin of each core and corresponding pin attributes.
- [c11] 11. The system of claim 10, further comprising means for assigning a vector index to each pin within a multiple pin core having more than one pin with the same class and channel identifier, wherein the vector index is a pin attribute.
- [c12] 12. The system of claim 10, further comprising means for bundling pins according to at least one global attribute, each global attribute indicating a common global parameter of the pins.
- [c13] 13. The system of claim 8, further comprising means for

establishing a set of primitive functions for use in constructing the class-type inference rules.

[c14] 14. A computer program product comprising a computer useable medium having computer readable program code embodied therein for building an automated datapath system generating tool for a datapath system including bit-sliced data between at least one source stage and at least one subsequent stage that are connected across a channel, the program product comprising:

- program code configured to define at least one system characteristic;

- program code configured to generate a core/pin rule for the design that defines each core of the design, each pin of each core and corresponding pin attributes; and

- program code configured to construct class-type inference rules for automatically generating the datapath system, each class-type inference rule executing at least one primitive function.

[c15] 15. The program product of claim 14, wherein the defining code includes:

- program code configured to define a set of cores to be used in the datapath system, and defining each stage of each core; and

- program code configured to establish a link order

name.

- [c16] 16. The program product of claim 15, wherein the defining code further comprises program code configured to identify any global attributes for a plurality of pins.
- [c17] 17. The program product of claim 14, wherein the core/pin rule generating code includes:
- program code configured to bundle pins of each stage according to at least one class, each class indicating a common wiring parameter for the pins, wherein the class is a pin attribute;
  - program code configured to categorize each class as one of a plurality of datapath system class-types;
  - program code configured to bundle pins according to at least one channel identifier, wherein the channel identifier is a pin attribute; and
  - program code configured to generate the core/pin rule that defines each core of the design, each pin of each core and corresponding pin attributes.
- [c18] 18. The program product of claim 17, further comprising program code configured to
- assign a vector index to each pin within a multiple pin core having more than one pin with the same class and channel identifier, wherein the vector index is a pin attribute..

- [c19] 19. The program product of claim 17, further comprising program code configured to  
bundle pins according to at least one global attribute, each global attribute indicating a common global parameter of the pins.
- [c20] 20. The program product of claim 14, further comprising program code configured to  
establish a set of primitives for use in constructing the class-type inference rules.